

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Liang Jiang et al.

Group Art Unit: 1742

Serial No.: 10/675,367

Confirmation No.: 5979

Filed: September 30, 2003

Examiner: Jesse Randall Roe

FOR: NICKEL-CONTAINING ALLOYS, METHOD OF
MANUFACTURE THEREOF AND ARTICLES
DERIVED THEREFROM

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER RULE 1.132

STATE OF NEW YORK
COUNTY OF SCHENECTADY

I, Liang Jiang, say that I received a PHD in metallurgy from University of Tennessee, Knoxville in 2000. I have been employed by General Electric Company since 2001. From 2001 through the present, I have been engaged in a research program in the field of super alloy development. I am the author of more than twenty technical publications, I have received six United States Patents, and I have sixteen United States Patent Applications pending.

It is my opinion that tungsten and molybdenum are different alloying elements and are not "functionally equivalent." It is further my opinion that it would not be obvious to replace one with a "corresponding amount" of the other. As indicated in the accompanying amendment, two papers are illustrative examples of differences between tungsten (W) and molybdenum (Mo).

As can be seen from FIG. 8, page 2914 of M.S.A. Karunaratne et al., "Interdiffusion of the platinum-group metals in nickel at elevated temperatures," Acta Materialia 51 (2003) 2905-2919, W and Mo have different atomic numbers and atomic weights. Because W is much heavier than Mo, W will result in different density and strengthening effects. Furthermore, as

can be seen from FIG. 10, page 2915 of *Karunaratne, W and Mo have different diffusion rates in Nickel. Because W diffuses much slower than Mo, a different creep rate will result.*

As can be seen from table 6, page 8 of Robert L. Dreshfield et al., "Analyses of Elemental Partitioning in Advanced Nickel-Base Superalloy Single Crystals," NASA/TM – 2005 – 213288, W and Mo partition differently in gamma and gamma prime. This difference will led to different strengthening effects such as those described on page 9.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.

liang liang

Date: 13 June 2008

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